KONGUNADU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)

Re-accredited by NAAC with 'A+' Grade (4th Cycle)

College of Excellence (UGC)

Coimbatore – 641029.

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE OUTCOMES (CO)

OF

B.Sc INFORMATION TECHNOLOGY

For the students admitted in the

Academic Year 2021-2022

Programme Code : **12**		**B.Sc Information Technology**		
Course Code: **21UIT101**		**Core Paper I – C Programming**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**I**	**5**	**75**	**5**

Course Objectives

1. To impart adequate knowledge on the need of programming languages and problem solving techniques.
2. To develop an in-depth understanding of functional and logical concepts of C Programming.
3. To provide exposure to problem-solving through C programming.
4. To familiarize with the basic syntax and semantics of C Language.

Course Outcomes (CO)

K1 to K5	CO1	Remember various programming constructs and develop C programs.
	CO2	Understand the fundamentals of C programming.
	CO3	Apply the right data representation formats based on the requirements of the problem.
	CO4	Analyze, implement, test and debug programs that use arrays for character strings and that use pointers for character strings.
	CO5	Evaluate the usage of different Operations on functions, pointers, structures, union and files.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT1CL**		**Core Practical I – Programming Lab - C**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**I**	**5**	**75**	**2**

Course Objectives

1. To introduce the field of programming using C language.
2. To learn problem solving techniques using C.
3. To enhance the analyzing and problem solving skills and use the same for writing programs in C.

Course Outcomes (CO)

K3 to K5	CO1	Understand basic Structure of the C-Programming, declaration and usage of variables.
	CO2	Apply Arithmetic operator, Conditional operator, logical operator, relational operators and other C constructs for developing programs.
	CO3	Develop C programs using decision making, branching, looping constructs.
	CO4	Develop programs using the Arrays, structures, functions, pointers and Strings
	CO5	Implement files and command line arguments.

21EVS101

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21EVS101**		**Part IV –Environmental Studies**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**I**	**2**	**30**	**2**

Objectives

1. The course will provide students with an understanding and appreciation of the complex interactions of man, health and the environment. It will expose students to the multi-disciplinary nature of environmental health sciences
2. To inculcate knowledge and create awareness about ecological and environmental concepts, issues and solutions to environmental problems.
3. To shape students into good "Eco citizens" thereby catering to global environmental needs.
4. This course is designed to study about the types of pollutants including gases, chemicals petroleum, noise, light, global warming and radiation as well as pollutant flow and recycling and principles of environmental pollution such as air, water and soil
5. The course will address environmental stress and pollution, their sources in natural and workplace environments, their modes of transport and transformation, their ecological and public health effects, and existing methods for environmental disease prevention and remediation.

COURSE OUTCOMES

On successful completion of the course, the students will be able to

K1 to K5	CO1	Understand how interactions between organisms and their environments drive the dynamics of individuals, populations, communities and ecosystems
	CO2	Develop an in-depth knowledge on the interdisciplinary relationship of cultural, ethical and social aspects of global environmental issues
	CO3	Acquiring values and attitudes towards complex environmental socio-economic challenges and providing participatory role in solving current environmental problems and preventing the future ones
	CO4	To gain inherent knowledge on basic concepts of biodiversity in an ecological context and about the current threats of biodiversity
	CO5	To appraise the major concepts and terminology in the field of environmental pollutants, its interconnections and direct damage to the wildlife, in addition to human communities and ecosystems

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT202**		**Core Paper II - Computer Organization and Architecture**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**II**	**4**	**60**	**4**

Course Objectives

1. To gain an in-depth knowledge about the different types of number systems and number conversions.
2. To learn the concepts of Multiplexers, Flip-Flops and Registers.
3. To impart the knowledge about Input/ Output devices, Interrupt handling and PriorityInterrupt.

Course Outcomes (CO)

K1 to K5	CO1	Remember the circuits of various flip-flops.
	CO2	Understand the organization of various units such as control unit, arithmetic and logic unit, memory unit and I/O unit in a digital computer.
	CO3	Apply the rules of Karnaugh map in simplifying the expressions.
	CO4	Analyze the concept of mapping techniques.
	CO5	Evaluate the usage and applications of different memory organization concepts.

Sub.Code: 21UIT203

Programme Code : 12		**B.Sc Information Technology**		
Course Code**: 21UIT203**		**Core Paper III – Object Oriented Programming with C++**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**II**	**3**	**45**	**5**

Course Objectives

1. To develop a greater understanding of the issues involved in programming language design and object-oriented paradigms.
2. To impart adequate knowledge on the need of object-oriented programming languages.
3. To enhance problem solving and programming skills in C++ by implementing the object-oriented concepts.

Course Outcomes (CO)

K1 to K5	CO1	Remember the characteristics of Procedure and Object-Oriented Programming Languages
	CO2	Understand the fundamentals of C++ Programming structure like function overloading and constructors.
	CO3	Analyze C++ features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.
	CO4	Apply the concepts in object-oriented programming in terms of software reuse and managing complexity, to solve real-world problems.
	CO5	Evaluate the data and file manipulations using C++.

Sub.Code: 21UIT2CM

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT2CM**		**Core Paper III – Object Oriented Programming with C++**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**II**	**3**	**45**	**2**

Course Objectives

1. To understand and Apply Object oriented features and C++ concepts
2. To apply the concept of polymorphism and inheritance.
3. To develop applications using Console I/O and File I/O.

Course Outcomes (CO)

K3 to K5	CO1	Creating simple programs using Classes and Objects
	CO2	Apply the basic concepts of Object-Oriented Programming
	CO3	Solve the programs using virtual functions and inheritance.
	CO4	Develop and Implement programs using Stream I/O and File I/O.
	CO5	Implement files and command line arguments.

21VED201

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21VED201**		**Part IV – Value Education – Moral and Ethics**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**II**	**2**	**30**	**2**

Objectives

1. To impart Value Education in every walk of life.
2. To help the students to reach excellence and reap success.
3. To impart the right attitude by practicing self-introspection.
4. To portray the life and messages of Great Leaders.
5. To insist the need for universal brotherhood, patience and tolerance.
6. To help the students to keep them fit.
7. To educate the importance of Yoga and Meditation.

Course Outcomes (CO)

After completing the course, the students

K1 to K5	CO1	will be able to recognize Moral values, Ethics, contribution of leaders, Yoga and its practice
	CO2	will be able to differentiate and relate the day to day applications of Yoga and Ethics in real life situations
	CO3	can emulate the principled life of great warriors and take it forward as a message to self and the society
	CO4	will be able to Analyse the Practical outcome of practicing Moral values in real life situation
	CO5	could Evaluate and Rank the outcome of the pragmatic approach to further develop the skills

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT304**		**Core Paper IV –Data Structures and Algorithms**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**III**	**5**	**75**	**4**

Course Objectives

1. To impart the basic concepts of data structures and algorithms.
2. To understand the basic concepts of searching and sorting algorithms.
3. To teach efficient storage mechanisms of data for an easy access.

Course Outcomes (CO)

K1 to K5	CO1	Remember the algorithms of various data structures.
	CO2	Understand the operations like searching, insertion, deletion and traversing mechanism on various data structures.
	CO3	Apply the data structure in real time problem solving.
	CO4	Analyze the complexity of different algorithms.
	CO5	Evaluate the usage of various Indexing and File Organization Techniques.

Programme Code: 12		**B.Sc Information Technology**		
Course Code: **21UIT305**		**Core Paper V – Relational Database Management System and Oracle**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	III	5	75	4

Course Objectives

1. To learn the basic concepts of database.
2. To understand the concepts of DDL and DML.
3. To gain an insight of basic concepts SQL and PL/SQL languages.

Course Outcomes (CO)

K1 to K5	CO1	Remembering the concept of Database.
	CO2	Understanding the concept of data Integrity constraints.
	CO3	Applying various DDL, DML statements, Joins, Queries and PL / SQL statements.
	CO4	Analyzing various types of database management systems.
	CO5	Evaluate the relational database concepts to develop application using RDBMS.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT306**		**Core Paper VI – Advanced Java Programming**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**III**	**5**	**75**	**5**

Course Objectives

1. To learn the basic features of Java Programming.
2. To gain the knowledge about the concepts of Packages, Inheritance, Interfaces and Multithreading.
3. To develop the ability to create and run java programs using Applets and AWT.

Course Outcomes (CO)

K1 to K5	CO1	Remember the keywords, data types and Control Structures in Java.
	CO2	Understand the concept of Creating Classes, Functions and Objects.
	CO3	Apply the concepts of Constructors, Inheritance, Exception Handling, & JDBC
	CO4	Analyze the concepts of Threads, applets and Files and Swings
	CO5	Evaluate the usage of Swings and AWT in Java Applications

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT3CN**		**Core Practical III – Programming Lab – Advanced Java and Oracle**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**III**	**5**	**75**	**2**

Course Objectives

1. To develop the ability to build web based applications using applets and AWT.
2. To create tables and triggers using PL/SQL.
3. To apply the concepts of Multithreading, Inheritance and Packages.

Course Outcomes (CO)

K3 to K5	CO1	Recollect the concepts of control structures, inheritance, method overriding in Java
	CO2	Implement the concept of interface, packages, multithreading, applets and Database
	CO3	Apply manipulation operations using PL/SQL statements and validate the database using triggers
	CO4	Develop Internet programs using Java Applets
	CO5	Access database through Java programs, using Java Data Base Connectivity (JDBC)

21UIT3S1

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT3S1**		**Skill Based Subject 1 - Android Application Development**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**III**	**2**	**30**	**3**

Course Objectives

1. To learn the basic concepts of Android application development.
2. Ability to build Android applications by using development tools in the Android development environment.
3. To gain an understanding on Android user Interface fundamentals and Android widget toolbox.

Course Outcomes (CO)

K1 to K5	CO1	Remember the features of Android and tools in building Android Applications
	CO2	Understand the concept of Android application lifecycle, Layout and fragments.
	CO3	Apply and analyze the User interfaces and the development tools in creating the android applications.
	CO4	Deploy an application in Android that work with SQLite Databases.
	CO5	Evaluate the use of various layouts and widgets in Android Applications.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT407**		**Core Paper VII - Operating Systems**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**IV**	**5**	**75**	**4**

Course Objectives

1. To gain an insight of the fundamentals of Operating System.
2. To enrich the knowledge on process management, CPU Scheduling and Memory management.
3. To provide the design principles of operating system with a case study of Linux and UNIX.

Course Outcomes (CO)

K1 to K5	CO1	Remember the fundamentals of operating system
	CO2	Understand the basic concepts of Process & Scheduling
	CO3	Implement CPU scheduling algorithms for Process Scheduling and to deploy the memory management Concepts
	CO4	Analyze the problem of deadlock and File System Concepts
	CO5	Evaluate the usage of directory implementation and its allocation methods.

21UIT408

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT408**		**Core Paper VIII - .Net Programming**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**IV**	**5**	**75**	**4**

Course Objectives

1. To understand the .Net Framework components.
2. To integrate variables and functions in developing .Net applications.
3. To build applications using Vb.Net and Asp.Net programming techniques.

Course Outcomes (CO)

K1 to K5	CO1	Remember the structure and syntax of .NET
	CO2	Understand the properties and methods of the various tools.
	CO3	Apply the concept of .NET in developing windows and web applications.
	CO4	Analyze the database connectivity using ADO.NET.
	CO5	Evaluate the usage of various Web controls and Validation Controls.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT409**		**Core Paper IX- Computer Networks**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	IV	**5**	**75**	**4**

Course Objectives

1. To learn the terminology and concepts of the OSI reference model and TCP/IP reference model.
2. To Identify the key issues for the realization of the LAN/WAN/MAN network architectures.
3. To understand a basic knowledge of the use of cryptography and different techniques keys used for Encryption and Decryption.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic structure of ISO/OSI reference model.
	CO2	Understanding the knowledge of the use of Cryptography.
	CO3	Apply the concept of routing algorithms.
	CO4	Analyzing Digital Signatures Symmetric-Key Signatures and Public-Key Signatures.
	CO5	Evaluate the applications and usage of Internet Protocols.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT4CO**		**Core Practical IV – Programming Lab – .NET**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**IV**	**5**	**75**	**2**

Course Objectives

1. To become familiar with the tools and operations of VB.Net
2. To get a simple understanding of windows- based programming.
3. To gain knowledge in developing real time applications.

Course Outcomes (CO)

K3 to K5	CO1	Applying the appropriate tools, methods and events for developing the applications.
	CO2	Implementing the syntax and functions in developing the real time applications.
	CO3	Analyzing the database applications with ADO.NET
	CO4	Develop menu-based program for text manipulation,
	CO5	Implement Web applications using ASP .NET

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT4A4**		**Allied Paper 1V –Microprocessors, PC Hardware and Interfacing**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**IV**	**6**	**90**	**5**

Course Objectives

1. To teach the architecture and instruction set of different Microprocessors.
2. To learn the architecture of Microcontrollers, and Peripherals.
3. To understand the architectures of Serial and Parallel Ports.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic architecture of 16-bit and 32-bit microprocessors.
	CO2	Understand the 16-bit memory and peripheral devices.
	CO3	Apply the concepts of advanced microprocessors like 80386, Pentium pro, MMX technologies on real time systems.
	CO4	Analyze the development tools, I/O devices, Drivers, Ports and USB.
	CO5	Evaluate the usage of computational design concepts related to architecture.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT4SL**		**Skill Based Subject 2 (Practical)- Android Application Development Lab**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**IV**	**2**	**30**	**3**

Course Objectives

1. To learn the basics of Android application development.
2. To gain an insight of the tools in building Android applications.
3. To acquire the knowledge for handling User Interface components, fragments, Layouts and other controls.

Course Outcomes (CO)

K3 to K5	CO1	Recollect the usage of development tools used in building Android applications.
	CO2	Apply the concept of major User Interface components like Fragments and the Action Bar, Layouts and other controls.
	CO3	Deploy an android application and manipulate data using the content provider
	CO4	Develop various Android applications related to layouts & rich uses interactive interfaces
	CO5	Implement Android applications using mobile related server-less database like SQLITE

Sub.Code: 21UIT510

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT510**		**Core Paper X – Web Technology**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**V**	**6**	**90**	**4**

Course Objectives

1. To acquire the knowledge about web programming and scripting languages.
2. To learn the basic concepts of webpage design using HTML.
3. To gain an insight of developing dynamic webpage by using CSS and DHTML.
4. To develop the ability to create a well-formed and Valid XML documents.
5. To enhance the skills to create and deploy the web applications.

Course Outcomes (CO)

K1 to K5	CO1	Remember the concepts of HTML for designing webpages.
	CO2	Understand the concepts of DHTML and CSS to create dynamic webpages.
	CO3	Apply PHP and Ajax for developing real time web applications.
	CO4	Analyze and validate the webpages by using Java script.
	CO5	Evaluate the Applications and usage of static and dynamic web pages.

Sub.Code: 21UIT511

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT511**		**Core Paper XI – Software Engineering**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**V**	**5**	**75**	**4**

Course Objectives

1. To assist the students in understanding the basic theory of software engineering.
2. To teach about various testing and debugging techniques.
3. To gain knowledge about quality control and to develop good quality software

Course Outcomes (CO)

K1 to K5	CO1	Remember the fundamentals of software engineering concepts.
	CO2	Understand common lifecycle processes such as waterfall model, spiral model, prototyping model and evolutionary models.
	CO3	Apply the principles and techniques of software engineering in the architectural design, detail design, and implementation of software applications.
	CO4	Analyze the developed software using different testing concepts.
	CO5	Evaluate the usage of Reengineering and Reverse Engineering.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT512**		**Core Paper XII – Big Data Analytics**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**V**	**5**	**75**	**4**

Course Objectives

1. To learn the basic concepts of Big Data and its technologies.
2. To learn about NoSQL and Big data Management
3. To gain knowledge about Hadoop and HDFS.
4. To learn about web mining, graph mining and social network mining.

Course Outcomes (CO)

K1 to K5	CO1	Remember big data and use cases from selected business domains
	CO2	Understand NoSQL big data management
	CO3	Apply map-reduce analytics using Hadoop.
	CO4	Analyze Graph Mining, Web Mining and Social Network Mining.
	CO5	Evaluate the usage of web mining in social networks.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT5CP**		**Core Practical V–Programming Lab – Web Technology**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**V**	**6**	**90**	**2**

Course Objectives

1. To develop the ability to build web applications using various technologies like HTML, CSS, PHP and Ajax.
2. To create dynamic web pages and validate it using Java script.
3. To design and implement real time applications by applying the concepts of PHP and Ajax.

Course Outcomes (CO)

K3 to K5	CO1	Recollect the concept of designing web pages using HTML and validate it using Javascript.
	CO2	Understand the concepts of CSS and DHTML to create dynamic web pages.
	CO3	Develop the webpage using the concepts of PHP and Ajax.
	CO4	Create web pages using XHTML and Cascading Style Sheets.
	CO5	Build dynamic web pages using JavaScript.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT5X1**		**EDC – Designing through Multimedia - GIMP**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**V**	**2**	**30**	**3**

Course Objectives

1. To include the foundation theories of basic photo editing program.
2. To understand the features of filters, Bezier curves, layer masks, and an animation package.
3. To introduce the basic concepts and theories that is used as the foundation of Photo and texture editing.

Course Outcomes (CO)

K3 to K5	CO1	Apply the advanced features including filters, Bezier curves, layer masks, and animation package.
	CO2	Analyze the significance of good photo creation/manipulation and its overall Impacts.
	CO3	Implement the programs using noise reduction, cropping, automatic image enhancement tools, color adjustment tools, gradients, and customizable brushes.
	CO4	Implement Image Editing in GIMP.
	CO5	Apply various tools in GIMP for image manipulation.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT613**		**Core Paper XIII - IOT Using Python**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**VI**	**6**	**90**	**4**

Course Objectives

1. To learn the architecture of Internet of Things and connected world.
2. To learn about various IoT related protocols.
3. To Explore on use of various hardware and sensing technologies to build IoT applications.
4. To learn the available cloud services and communication API‘s for developing smart cities.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic syntax of Python Programming
	CO2	Understand physical design of Internet of Things.
	CO3	Apply the usage of Internet of Things in various real-life applications.
	CO4	Analyze programming Raspberry pi with Python.
	CO5	Evaluate the revolution of Internet in Mobile Devices, Cloud & Sensor Networks.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT614**		**Core Paper XIV – Information Security**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**VI**	**6**	**90**	**4**

Course Objectives

1. To enable the students to learn fundamental concepts of computer security.
2. To provide an understanding of principal concepts, major issues, technologies and basic approaches in information security.
3. To understand the concepts of security policies such as authentication, integrity and confidentiality.

Course Outcomes (CO)

K1 to K5	CO1	Remembering the basic concepts of security and how to avoid threats.
	CO2	Understanding the issues and technologies in information security.
	CO3	Applying various protection mechanisms.
	CO4	Analyzing various legal and ethical issues in security.
	CO5	Evaluate the usage of security policies such as confidentiality, integrity, and availability, as well as protocols to implement such Policies.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT6CQ**		**Core Practical VI – Programming Lab – IoT Using Python**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**VI**	**6**	**90**	**2**

Course Objectives

1. To develop applications using various IoT Techniques.
2. To learn the basic constructs in Python programming and to apply them for developing IOT applications.
3. To implement various smart applications using IoT.

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Course Outcomes (CO)

K3 to K5	CO1	Remember the techniques for effective design of IoT Applications with Raspberry pi.
	CO2	Understand the basic constructs of Python Programming.
	CO3	Deploy IoT applications and connect to the Cloud.
	CO4	Apply the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
	CO5	Analyze and evaluate protocols used in IOT.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT6Z1**		**Core Project – Project Work & Viva - Voce *** **		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**VI**	**4**	**60**	**4**

Course Objectives

On successful completion of all the above courses

1. To get the knowledge about selecting the task based on their course skills.
2. To get the knowledge about analytical skill for solving the selected task.
3. To gain confidence for implementing the task.
4. To gain confidence for solving the real time problems.

Course Outcomes (CO)

K3 to K5	CO1	Apply the programming skill for solving the project.
	CO2	Analyze the task to collect the necessary information about the system.
	CO3	Evaluating the project based on the software.
	CO4	Apply testing techniques to test the different modules of the project.
	CO5	Implement the Project in the user environment.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UIT6SM**		**Skill Based Subject 3 (Practical)- Software Testing Lab**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**VI**	**2**	**30**	**3**

Course Objectives

1. To gain knowledge about recording the test case.
2.To design and construct the test cases.
3. To learn about the concepts of assert, verification, wait commands.

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Course Outcomes (CO)

K3 to K5	CO1	Apply validation and verification in web applications.
	CO2	Analyze the fields of the text area in the applications.
	CO3	Implement the concepts of assert and verify.
	CO4	Apply essential characteristics of tool for test automation.
	CO5	Evaluate different strategies for generating system test cases.

Programme Code: **12**	**B.Sc. Information Technology**		
Elective – Mobile Computing			
Batch **2021-2022**	Hours / Week **6**	Total Hours **90**	Credits **5**

Course Objectives

1. To learn the basic concepts of Mobile Computing and its Applications.
2. To provide various emerging technologies in Mobile computing services.
3. To gain knowledge about GSM, GPRS, CDMA and 3G.

Course Outcomes (CO)

K1 to K5	CO1	Remember the concept of Wireless LANs, Signals and Antennas
	CO2	Understand the concepts of Routing and Handover
	CO3	Apply the techniques used in the GSM and Bluetooth
	CO4	Analyze World Wide Web and WAP.
	CO5	Evaluate the usage of IEEE 802.11 standards.

Programme Code: **12**	**B.Sc. Information Technology**		
Elective – Cloud Computing			
Batch **2021-2022**	Hours / Week **6**	Total Hours **90**	Credits **5**

Course Objectives

1. To teach the basics of cloud computing.
2. To understand the broad perspective of cloud architecture
3. To gain the knowledge of cloud services and cloud security.

Course Outcomes (CO)

K1 to K5	CO1	Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud.
	CO2	Understand the core issues of cloud computing such as security, privacy, and interoperability.
	CO3	Apply the appropriate technologies and approaches for the related issues.
	CO4	Analyze the appropriate cloud computing solutions and recommendations according to the applications used.
	CO5	Evaluate the Risk, Security and data loss prevention in cloud.

Programme Code: **12**	**B.Sc. Information Technology**		
Elective - Data Mining			
Batch **2021-2022**	Hours / Week **6**	Total Hours **90**	Credits **5**

Course Objectives

1. To introduce the basic concepts of Data Mining algorithms, methods and tools.
2. To develop and apply critical thinking, problem-solving, and decision-making skills.
3. Todiscover interesting patterns, analyze supervised and unsupervised models and Estimate the accuracy of the algorithms.

Course Outcomes (CO)

K1 to K5	CO1	Remembering the data mining principles and techniques.
	CO2	Understanding the concept of raw data processing using data mining algorithms.
	CO3	Applying data mining algorithms to build analytical applications.
	CO4	Analyzing large amount of data to extract patterns and to solve problems.
	CO5	Evaluate the performance of various algorithms by comparing different approaches.

Programme Code: **12**	**B.Sc. Information Technology**		
Elective – Artificial Intelligence			
Batch **2021-2022**	Hours / Week **6**	Total Hours **90**	Credits **5**

Course Objectives

1. To understand the basic concepts of Artificial Intelligence (AI) and identify the AI problems and domains.
2. To provide search techniques to solve the problems.
3. To represent and access the domain specific knowledge.

Course Outcomes (CO)

K1 to K5	CO1	Remember the techniques of Artificial Intelligence in Problem Solving.
	CO2	Understand the nature of AI problems and task domains of AI.
	CO3	Apply the appropriate search procedures to solve the problems by using best algorithms.
	CO4	Analyze and select the suitable knowledge representation method.
	CO5	Evaluate the techniques of representing knowledge using rules.

Programme Code: **12**	**B.Sc. Information Technology**		
Elective – Software Project Management			
Batch **2021-2022**	Hours / Week **6**	Total Hours **90**	Credits **5**

Course Objectives

1. To understand the overview of Software Project Characteristics and software Management.
2. To familiarize with the different methods and techniques used in project management.
3. To understand and reduce the failure issues of software projects.
4. To learn how effectively the project scheduling, risk analysis, quality management and project cost estimation can be implemented using various techniques.

Course Outcomes (CO)

K1 to K5	CO1	Remember various Life Cycle models in project development.
	CO2	Understand various concepts involved in project management, project planning and project scheduling.
	CO3	Analyze project risks, monitor and track project deadlines and produce a work plan and resource schedule.
	CO4	Applythe project management tools and techniques in a diversityof fields that include new product and process development, construction, information technology, and applied research.
	CO5	Evaluate the workflows in the process of software development.

Programme Code: **12**	**B.Sc. Information Technology**		
Elective – Digital Image Processing			
Batch **2021-2022**	Hours / Week **6**	Total Hours **90**	Credits **5**

Course Objectives

1. To understand the basic fundamental concept of an image
2. To know the concepts of Image techniques, Sharpe and filtering ideas
3. To gain the knowledge about image patterns, structures and image compressions

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic image concepts.
	CO2	Understand the image sharpens enhancement and compression models.
	CO3	Apply various image techniques like edge linking and boundary detection.
	CO4	Analyze basic requirements of image processing like structure, compression and resolution.
	CO5	Evaluate the usage of object recognition and Interpretation methods.

21UHR3N1

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UHR3N1**		**Part IV -Non - Major Elective – I Human Rights**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**III**	**2**	**30**	**2**

Objectives

1. To prepare for responsible citizenship with awareness of the relationship between Human Rights, democracy and development.
2. To impart education on national and international regime on Human Rights.
3. To sensitive students to human suffering and promotion of human life with dignity.
4. To develop skills on human rights advocacy
5. To appreciate the relationship between rights and duties
6. To foster respect for tolerance and compassion for all living creature.

Course Outcomes (CO)

K1 to K5	CO1	To understand the hidden truth of Human Rights by studying various theories.
	CO2	To acquire overall knowledge regarding Human Rights given by United Nation Commission. (UNO)
	CO3	To gain knowledge about various organs responsible for Human Rights such as National Human Rights Commission and state Human Right commission (UNHCR)
	CO4	To get habits of how to treat aged person, others and positive social responsibilities
	CO5	To treat and confirm, child, refugees and minorities with positive social justice.

Programme Code : 12		**B.Sc Information Technology**		
Course Code: **21UWR4N2**		**Part IV -Non- Major Elective – II Women's Rights**		
Batch	Semester	Hours / Week	Total Hours	Credits
2021-2022	**IV**	**2**	**30**	**2**

Objectives

1. To know about the laws enacted to protect women against violence.
2. To impart awareness about the hurdles faced by women.
3. To develop a knowledge about the status of all forms of women to access to justice.
4. To create awareness about women's rights.
5. To know about laws and norms pertaining to protection of women.
6. To understand the articles which enables the women's rights.
7. To understand the Special Women Welfare laws.
8. To realize how the violence against women puts an undue burden on healthcare services.

Course Outcomes (CO)

After Completion of the Course the student will be able to

K1 to K5	CO1	Appraise the importance of Women's Studies and incorporate Women's Studies with other fields.
	CO2	Analyze the realities of Women Empowerment, Portrayal of Women in Media, Development and Communication.
	CO3	Interpret the laws pertaining to violence against Women and legal consequences.
	CO4	Contribute to the study of the important elements in the Indian Constitution, India Laws for Protection of Women.
	CO5	Spell out and implement Government Developmental schemes for women and create awareness on modernization and impact of technology on Women.

Programme Code: **12**	**B.Sc. Information Technology**		
Non- Major Elective – Consumer Affairs			
Batch **2021-2022**	Hours/Week **2**	Total Hours **30**	Credits **2**

Course Objectives

1. To familiarize the students with their rights and responsibilities as a consumer.
2. To understand the procedure of redress of consumer complaints.
3. To know more about decisions on Leading Cases by Consumer Protection Act.
4. To get more knowledge about Organizational set-up under the Consumer Protection Act.
5. To impart awareness about the Role of Industry Regulators in Consumer Protection.
6. To understand Contemporary Issues in Consumer Affairs.

Course Outcomes (CO)

K1 to K5	CO1	Able to know the rights and responsibility of consumers.
	CO2	Understand the importance and benefits of Consumer Protection Act.
	CO3	Applying the role of different agencies in establishing product and service standards.
	CO4	Analyse to handle the business firms' interface with consumers.
	CO5	Assess Quality and Standardization of consumer affairs